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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Gerhard Berger

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EXAMINER

GREENE, JASON M

ART UNIT

PAPER NUMBER

1797

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/521,515	Applicant(s) BERGER ET AL.	
	Examiner Jason M. Greene	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-39 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 20-28, 32 and 34-39 is/are rejected.
- 7) ☒ Claim(s) 29-31 and 33 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/18/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claims

1. With regard to claim 20, the Examiner suggests Applicants rewrite the phrase “the a gas stream in line 3 as “the gas stream” to correct an apparent typographical error.
2. With regard to claim 37, the Examiner suggests Applicants delete the word “generator” in line 2 to improve the readability of the claim language.
3. With regard to claim 38, the Examiner suggests Applicants delete the word “is” at the end of line 2 to improve the readability of the claim language.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 20-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Katagiri et al. (US 6,656,620 B2).

Katagiri et al. discloses an apparatus for humidifying a gas stream (3) comprising a humidifier device (6) comprising at least one membrane permeable to water vapor, wherein the gas stream and a humid gas stream (5) flow through the humidifier device, the gas stream and the humid gas stream being separated from one another by the at least one membrane, and at least one bypass line (21,24) configured to route at least part of one of the gas stream and the humid gas stream so that it does not come into contact with the membrane, wherein the gas stream is an inlet gas for a fuel cell system (1) and the humid gas includes an exhaust gas from the fuel cell system, wherein the at least one bypass line (21) is configured to route a first portion of the gas stream and to combine again downstream of the bypass line with the gas stream that flows through the humidifier, wherein the at least one bypass line (24) is configured to route a portion of the humid gas stream, wherein the fuel cell system includes a fuel cell having a cathode space and wherein the gas stream is a feed air for the cathode space, and wherein the humid gas stream contains at least a part of the exhaust gases from a fuel cell of the fuel cell system in Figs. 1, 2, 4 and 5 and col. 4, line 6 to col. 6, line 50.

6. Claims 34-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Katagiri et al. (US 6,656,620 B2).

Katagiri et al. discloses a method for humidifying a gas stream comprising flowing the gas stream (3) through a humidifier (6) having a membrane permeable to water vapor, flowing a humid gas stream (5) through the humidifier, the gas stream and the humid gas stream being separated by the membrane, routing at least a portion of one of the gas stream and the humid gas stream using a bypass line (21,24) so that it does not come into contact with the membrane, and varying a quantity of the portion so as to set a predetermined dew point in the gas stream, wherein a humidity of the humid gas stream is reduced in the humidifier, wherein the gas stream and the humid gas stream are in a fuel cell system (1), wherein the fuel cell system generates electrical energy in a land vehicle, and wherein the electrical energy generator provides a driving energy or is an auxiliary power unit in Figs. 1, 2, 4 and 5 and col. 4, line 6 to col. 6, line 50.

7. Claims 20-22 and 24-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimanuki et al. (US 6,755,399 B2).

Shimanuki et al. discloses an apparatus for humidifying a gas stream comprising a humidifier device (21) comprising at least one membrane permeable to water vapor, wherein the gas stream and a humid gas stream flow through the humidifier device, the gas stream and the humid gas stream being separated from one another by the at least one membrane, and at least one bypass line (21e) configured to route at least part of one of the gas stream and the humid gas stream so that it does not come into contact with the membrane, wherein the gas stream is an inlet gas for a fuel cell system and the

humid gas includes an exhaust gas from the fuel cell system, wherein the at least one bypass line (21e) is configured to route a first portion of the gas stream and to combine again downstream of the bypass line with the gas stream that flows through the humidifier, wherein the fuel cell system includes a fuel cell having a cathode space and wherein the gas stream is a feed air for the cathode space, wherein the humid gas stream contains at least a part of the exhaust gases from a fuel cell of the fuel cell system, and wherein the at least one bypass line is integrated in the humidifier device in Figs. 1, 5 and 12 and col. 4, line 25 to col. 9, line 20.

8. Claims 20-22, 24 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki et al. (US 6,953,635 B2).

Suzuki et al. discloses an apparatus for humidifying a gas stream (3) comprising a humidifier device (5A) comprising at least one membrane permeable to water vapor, wherein the gas stream and a humid gas stream (8) flow through the humidifier device, the gas stream and the humid gas stream being separated from one another by the at least one membrane, and at least one bypass line (13) configured to route at least part of one of the gas stream and the humid gas stream so that it does not come into contact with the membrane, wherein the gas stream is an inlet gas for a fuel cell system (1) and the humid gas includes an exhaust gas from the fuel cell system, wherein the at least one bypass line (13) is configured to route a first portion of the gas stream and to combine again downstream of the bypass line with the gas stream that flows through the humidifier, wherein the fuel cell system includes a fuel cell having a cathode space

and wherein the gas stream is a feed air for the cathode space, wherein the humid gas stream contains at least a part of the exhaust gases from a fuel cell of the fuel cell system in Figs. 1 and 11 and col. 5, line 63 to col. 6, line 32.

9. Claims 20-22, 24 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Wheat et al. (US 6,884,534 B2).

Wheat et al. discloses an apparatus for humidifying a gas stream (60) comprising a humidifier device (54) comprising at least one membrane permeable to water vapor, wherein the gas stream and a humid gas stream flow through the humidifier device, the gas stream and the humid gas stream being separated from one another by the at least one membrane, and at least one bypass line (80,86) configured to route at least part of one of the gas stream and the humid gas stream so that it does not come into contact with the membrane, wherein the gas stream is an inlet gas for a fuel cell system and the humid gas includes an exhaust gas from the fuel cell system, wherein the at least one bypass line is configured to route a first portion of the gas stream and to combine again downstream of the bypass line with the gas stream that flows through the humidifier, wherein the fuel cell system includes a fuel cell having a cathode space and wherein the gas stream is a feed air for the cathode space, wherein the humid gas stream contains at least a part of the exhaust gases from a fuel cell of the fuel cell system in Fig. 3 and col. 1, line 12 to col. 5, line 29.

10. Claims 34-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Wheat et al. (US 6,884,534 B2).

Wheat et al. discloses a method for humidifying a gas stream comprising flowing the gas stream (60) through a humidifier (54) having a membrane permeable to water vapor, flowing a humid gas stream through the humidifier, the gas stream and the humid gas stream being separated by the membrane, routing at least a portion of one of the gas stream and the humid gas stream using a bypass line (80,86) so that it does not come into contact with the membrane, and varying (90,84) a quantity of the portion so as to set a predetermined dew point in the gas stream, wherein a humidity of the humid gas stream is reduced in the humidifier, wherein the gas stream and the humid gas stream are in a fuel cell system, wherein the fuel cell system generates electrical energy in a land vehicle, and wherein the electrical energy generator provides a driving energy or is an auxiliary power unit in Fig. 3 and col. 1, line 12 to col. 5, line 29.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katagiri et al. (US 6,656,620 B2).

Katagiri et al. disclose the apparatus comprising a device (22) for varying a volumetric flow through the at least one bypass line, but it does not disclose the bypass line being integrated in the humidifier device.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the bypass line of Katagiri et al. into the humidifier device in that making parts integral is merely a choice of design. See *In re Larson*, 144 USPQ 347 and *In re Lockhart*, 90 USPQ 214.

13. Claims 26-28 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 6,953,635 B2).

Suzuki et al. disclose the apparatus comprising a device (15) for varying a volumetric flow through the at least one bypass line, but it does not disclose the bypass line being integrated in the humidifier device.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the bypass line of Suzuki et al. into the humidifier device in that making parts integral is merely a choice of design. See *In re Larson*, 144 USPQ 347 and *In re Lockhart*, 90 USPQ 214.

With regard to claim 32, Suzuki et al. discloses a further humidifier device (16) disposed downstream of the device, wherein the humid stream is routed (18) into the

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further device so as to humidify a further gas stream (bypass stream 13) in Figs. 1 and 11 and col. 5, line 63 to col. 6, line 32.

Allowable Subject Matter

14. Claims 29-31 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter:

With regard to claims 29-31, the prior art made of record does not teach or fairly suggest the apparatus of claim 28 further comprising the specific devices for varying the volumetric flow rate recited in the claims.

With regard to claim 33, the prior art made of record does not teach or fairly suggest the apparatus of claim 32 wherein the further gas stream is feed air passing into a gas generation device of the fuel cell system.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The .Suzuki et al. '832, Katagiri et al. '484 and Kanai et al. references disclose similar humidification systems.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (571) 272-1157. The examiner can normally be reached on Monday - Friday (9:00 AM to 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Jason M. Greene
Primary Examiner
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/Jason M. Greene/
4/13/08

jmg
April 13, 2008